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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,405	10/18/2001	Hideyuki Takai	1776-4067	9536

7590 08/14/2003

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EXAMINER
FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
1712	

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,405	TAKAI ET AL.	
	Examiner	Art Unit	
	Michael J Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18 and 43* is/are allowed.

6)☒ Claim(s) *1-14,16,17,19,23-26,28-30,35-37,39 and 41* is/are rejected.

7)☒ Claim(s) *5,6,13,15,20-22,27,31-34,38,40 and 42* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☒ Interview Summary (PTO-413) Paper No(s). *11* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. According to Applicant's copy of the PCT/IB/304, a certified copy of JP-11/359391 was submitted or transmitted to the USPTO; however, JP-11/359391 cannot be found in the instant application. Accordingly, an effort is currently being made to retrieve a copy of this document from the International Bureau.

Pending Claims

2. Claims 1-43 are pending in the instant application.

Claim Objections

3. In the previous Office action, claims 4-15, 19-22, 26-28, 31-34 and 38-42 were objected to under 37 CFR 1.75(c) as being in improper form. Applicant has made changes to address this issue; however, some of these claims remain in improper form.

Claims 15, 22, 32-34, and 42 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot reference back to another multiple dependent claim. See MPEP § 608.01(n)(4). Accordingly, the claims 15, 22, 32-34, and 42 have not been further treated on the merits.

Claims 20, 27, 31, and 40 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot reference back to two sets of claims to different features. See MPEP § 608.01(n)(3). Accordingly, the claims 20, 27, 31, 40 have not been further treated on the merits.

4. Claims 5, 13, 21, and 41 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Regarding claim 5, the structural limitations for cationic polymerization catalyst (3') are already set forth in the parent claim (claim 1).

Regarding claims 13, 21, and 41, the claim language recites that the composition is, "employed for coating cans." The claim limitation only recites an intended use of the composition, and it fails to provide any further detail regarding the chemical or physical makeup of the composition. Although these claims are not technically "use claims", they fail to further limit the claimed composition. One alternative to the current claim language would be to claim a can that is coated with the composition of each of the respective composition embodiments.

5. Claims 6 and 8 are objected to because of the following informalities: the language of claims 6 refers to formula (I-4) as an "organic silicone compound"; however, the structure of formula (I-4) is not a silicone. Rather, it is an organic silane compound. The term "silicone" implies a polymeric structure featuring repeating Si-O units. One way to amend this language would be to use the term "organic silane" or the more general term, "organosilicon compound". The language of claim 8 also misuses the word "silicone" when referring to a silicon atom of an organosilane and a compound that can produce a silanol group by photo-initiation. Appropriate correction is required.

Specification

6. The disclosure is objected to because of the following informalities: The term "organic silicone compound" is used improperly throughout the specification, and more specifically on pages: 13, 25, 36, 52-63, 70, and 75-81. It should be replaced with –organic silane compound–

or –organosilicon compound–. The term "organic silicone compound" is only appropriate when describing the subject matter beginning on the last paragraph on page 72 and ending midway through page 75. In addition to the cited portions of the Specification, there may be other instances of this inaccurate language. Applicant is required to correct all portions of the Specification where this language appears.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said metal compound (3")" in the composition of claim 1. There is insufficient antecedent basis for this limitation in the claim. Compound (3") is introduced in claim 4.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 14 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 14 includes the language, "under a condition of the absence of a volatile solvent by polymerizing monomers constructing an acrylic resin (i-2) in an epoxy compound (i-1). It is unclear if this is describing the overall curable resin or the acrylic resin. Furthermore, it is not clear what is meant by, "constructing an acrylic resin ***in*** an epoxy compound." It is unclear what is being made, and it is unclear how whatever is being made is made.

Similarly, claim 26 includes the language, "wherein said polymeric compound (iii-2) is an acrylic resin polymerized ***in*** said monomer (iii-1)." In this instance, it is assumed that (iii-2) is polymerized ***with*** (iii-1); not ***in*** (iii-1).

Suggested Claim Language

11. Claim 28 is an article claim that is written in process claim format. The following is a suggested change in order to improve clarity of the claim language:

A laminated printed circuit board comprising: a substrate coated with the resin composition according to claim 23; and intermediate insulating resin layers; wherein said coating is cured.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language;
>
> or
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

> has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

13. The rejection of claims 1-3, 16-17, 23-25, 29-30, and 35-37 under 35 U.S.C. 102(e) as being anticipated by Ikushima et al. (US Pat. No. 6,015,848) has been overcome amendment.

Independent claims 1, 16, 23, 29, 35, and 36 have been amended to include the following limitation: "said polymerization catalyst having a substituted hydrocarbon group having a carbon number of more than 10, a nonsubstituted hydrocarbon group having a carbon number of more than 10, or a cyclic organic structure having a more than 10 carbon number hydrocarbon group." Ikushima et al. do not disclose this type of polymerization catalyst.

14. Claims 23, 26, and 29-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Murai et al. (US Pat. No. 6,437,090).

Regarding claims 23 and 26, Murai et al. disclose ***(23)*** a resin composition for insulating a laminated printed circuit board (column 55, lines 18-22; column 57, lines 49-54) which comprises (iii-1) a monomer having at least one functional group having ionic polymerizability (column 40, line 36 through column 45, line 58), (iii-2) a polymeric compound having at least one functional group having ionic polymerizability (column 45, lines 59-63), (3) a thermally-

activating ionic polymerization catalyst which can dissolve by heating and crystallize by cooling (column 4, line 66 through column 5, line 33), said polymerization catalyst having a substituted hydrocarbon group having a carbon number of more than 10, a nonsubstituted hydrocarbon group having a carbon number of more than 10, or a cyclic organic structure having a more than 10 carbon number hydrocarbon group (column 5, lines 34-47); and ***(26)*** wherein said polymeric compound (iii-2) is an acrylic resin (column 45, lines 59-63) polymerized *with* said monomer (iii-1) containing 3,4-epoxyclyclohexylmethyl (meth)acrylate (column 44, lines 36-45; column 45, lines 57-59).

Regarding claims 29 and 30, Murai et al. disclose ***(29)*** a curable resin composition which comprises (iv-1) an epoxy resin having ionic polymerizability (column 40, line 36 through column 45, line 58) and (3) a thermally-activating ionic polymerization catalyst which can dissolve by heating and crystallize by cooling (column 4, line 66 through column 5, line 33), said polymerization catalyst having a substituted hydrocarbon group having a carbon number of more than 10, a nonsubstituted hydrocarbon group having a carbon number of more than 10, or a cyclic organic structure having a more than 10 carbon number hydrocarbon group (column 5, lines 34-47); and ***(30)*** wherein said epoxy resin (iv-1) is a polyfunctional epoxy resin and at least one of said epoxy groups is a cycloaliphatic epoxy group (column 44, lines 18-35).

Claim Rejections - 35 USC § 102/103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 24 and 28 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Murai et al. (US Pat. No. 6,437,090).

Regarding claims 24, Murai et al. disclose the composition of claim 23, wherein (iii-1) has 1-2 epoxy groups per molecule and at least one of said epoxy groups is a cycloaliphatic epoxy group (column 40, line 36 through column 45, line 58).

Murai et al. do not explicitly disclose that monomer (iii-1) has a viscosity of not more than 1,000 cP @ 25°C; however, it has been found that, "products of identical chemical composition can not have mutually exclusive properties." A chemical composition *(or compound)* and its properties are inseparable; therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed Cir. 1990).

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Regarding claim 28, Murai et al. disclose a laminated printed circuit board comprising: a substrate coated with the resin composition according to claim 23, wherein said coating is cured (column 57, lines 49-54; column 58, lines 21-27).

Murai et al. do not explicitly disclose that the printed circuit board has intermediate insulating layers; however, these layers are an inherent feature of printed circuit boards. Printed

circuit boards are multi-layer laminates, for example, wherein resin layers and especially resin prepreg layers are used as intermediate insulating materials between layers featuring circuitry.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one ordinary skill in the art at the time of the invention.

Claim Rejections - 35 USC § 103

17. Claims 1-13, 16, 17, 19, 25, 35-37, 39, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikushima et al. (US Pat. No. 6,015,848) in view of Murai et al. (US Pat. No. 6,437,090).

Regarding claims 1-8 and 13, Ikushima et al. disclose ***(1 and 13)*** a curable resin composition (column 2, lines 50-67) which comprises (i-1) an epoxy compound having ionic polymerizability (column 2, lines 55-57; column 3, lines 1-29; column 37, lines 22-55); (i-2) an acrylic resin having an ionic polymerizable functional group (column 2, lines 58-61); and (3) a thermally activating ionic polymerization catalyst (column 2, lines 62-65) which can be dissolved by heating and crystallized by cooling (column 6, lines 44-57; column 7, lines 4-11 and 15-20); ***(2)*** wherein said epoxy compound (i-1) has 1-2 epoxy groups per molecule and at least one of said epoxy groups is a cycloaliphatic epoxy group (column 3, lines 1-29; column 37, lines 22-55); ***(3)*** wherein said acrylic resin (i-2) has a hydroxyl group and a glycidyl group and/or a cycloaliphatic epoxy group (column 3, line 30 through column 4, line 31); ***(4 and 5)*** wherein the thermally-activating ionic polymerization catalyst (3) contains at least one selected from the group consisting of a cationic polymerization catalyst (3') and a metal compound (3") (column 6, line 54 through column 7, line 34); ***(6)*** wherein said cationic polymerization catalyst (3') is at least one selected from the group consisting of a sulphonium salt, an iodonium salt, an

aromatic iron compound, an organosilicon compound, and a hydroxy functional aromatic compound *see instant claims for specific structures* (column 6, line 53 through column 7, line 35; column 22, line 47 through column 29, line 6); ***(7)*** wherein said metal compound *see claims for specific structures* (3") is a metal chelate complex (column 24, line 38 through column 29, line 6); and ***(8)*** wherein said thermally-activating ionic polymerization catalyst (3) contains said metal compound (3") and at least one kind selected from the group consisting of an organosilane having hydroxyl group directly connected to silicone atom, an organosiloxane having hydroxyl group directly connected to silicon atom, a phenol compound, an organosilicon compound having hydrolyzable group directly connected to silicon at atom, and a silicon compound which can produce silanol group by photo-irradiation (column 24, lines 38-42).

Regarding claims 16, 17, and 19, Ikushima et al. disclose ***(16)*** a solvent based coating composition (column 32, lines 25-35) which comprises (ii-1) and epoxy compound having at least two cycloaliphatic epoxy groups in the molecule and a number average molecular weight of not more than 2,000 (column 2, lines 55-57), (ii-2) an acrylic resin containing an epoxy group and having a number average molecular weight of 2,000-50,000, a hydroxyl group value of 10-250 mgKOH/g, and an epoxy equivalent of not more than 300 (column 2, lines 58-61), and (3) a thermally activating ionic polymerization catalyst (column 2, lines 62-65) which can be dissolved by heating and crystallized by cooling (column 6, lines 44-57; column 7, lines 4-11 and 15-20); ***(17)*** wherein said epoxy group in said acrylic resin (ii-2) containing an epoxy group is a cycloaliphatic epoxy group or an epoxy group derived from glycidylmethacrylate (column 3, line 30 through column 4, lines 31); and ***(19)*** wherein oxirane concentration is 5-11% by weight

in a resin composition composed of said epoxy compound (ii-1) and said acrylic resin (ii-2) containing an epoxy group (column 32, lines 18-35).

Regarding claim 25, Ikushima et al. disclose ***(25)*** a resin composition which comprises (iii-1) a monomer having at least one functional group having ionic polymerizability (column 2, lines 55-57), (iii-2) a polymeric compound having at least one functional group having ionic polymerizability (column 2, lines 58-61), and (3) a thermally activating ionic polymerization catalyst (column 2, lines 62-65) which can be dissolved by heating and crystallized by cooling (column 6, lines 44-57; column 7, lines 4-11 and 15-20), wherein said polymeric compound (iii-2 has a cycloaliphatic epoxy group (column 2, lines 58-61; column 3, line 30 through column 4, line 31).

It should be noted that Ikushima et al. do not explicitly disclose that the resin composition is "for insulating a laminated printed circuit board". However, this recitation has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In the instant case, it merely recites the intended use of the composition, and the body of the claim does not depend on the preamble for completeness.

Regarding claims 35, 37, and 41, Ikushima et al. disclose ***(35 and 41)*** a curable resin composition which comprises (v-1) an epoxy compound having ionic polymerizability (column 2, lines 55-57), (v-4) an oxetane compound having 1-6 oxetane rings per molecule (column 30,

line 28 through column 32, line 11), and (3) a thermally activating ionic polymerization catalyst (column 2, lines 62-65) which can be dissolved by heating and crystallized by cooling (column 6, lines 44-57; column 7, lines 4-11 and 15-20); and ***(37)*** wherein said epoxy component (v-1) has 1-4 epoxy groups per molecule and wherein at least one of said epoxy groups is a cycloaliphatic epoxy group (column 3, lines 1-29; column 37, lines 22-55).

Regarding claims 36, 37, and 39, Ikushima et al. disclose ***(36)*** a curable resin composition which comprises (v-1) an epoxy compound having ionic polymerizability (column 2, lines 55-57), (v-2) an acrylic resin having a functional group of ionic polymerizability (column 2, lines 58-61), (v-4) an oxetane compound having 1-6 oxetane rings per molecule (column 30, line 28 through column 32, line 11), and (3) a thermally activating ionic polymerization catalyst (column 2, lines 62-65) which can be dissolved by heating and crystallized by cooling (column 6, lines 44-57; column 7, lines 4-11 and 15-20); ***(37)*** wherein said epoxy component (v-1) has 1-4 epoxy groups per molecule and wherein at least one of said epoxy groups is a cycloaliphatic epoxy group (column 3, lines 1-29; column 37, lines 22-55); and ***(39)*** wherein said acrylic resin (v-2) has a hydroxyl group and a glycidyl group and/or a cycloaliphatic group (column 3, line 30 through column 4, line 31).

Ikushima et al. do not explicitly disclose that the viscosity of the epoxy compounds (i-1) and (v-1) is not more than 1,000 cP at 25°C; however, it has been found that, "products of identical chemical composition can not have mutually exclusive properties." A chemical composition *(or compound)* and its properties are inseparable; therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed Cir. 1990).

In all of the above claims, Ikushima et al. do not use a catalyst with the following structural characteristics: having at least a substituted hydrocarbon group having a carbon number of more than 10, or a nonsubstituted hydrocarbon group having a carbon number of more than 10, or a cyclic organic structure having a more than 10 carbon number hydrocarbon group. Generally, Ikushima et al. use onium salts of nitrogen, sulfur, phosphorus or iodine with a negative ion component of SbF_6^-, SbF_4^-, AsF_6^-, PF_6^-, or the like (column 6, line 53 through column 7, line 34). These thermoinitiated catalysts are desirable because they provide a temperature control mechanism over the crosslinking reaction between the epoxy monomer and the acrylic resin.

Murai et al. teach a resin system that is similar to the one found in Ikushima et al. The resin components are primarily: epoxy monomers, including: cycloaliphatic epoxies, polyfunctional cycloaliphatic epoxies, and vinyl-containing cycloaliphatic epoxies (column 40, line 63 through column 45, line 58); and a methacrylic or acrylic resin (column 45, lines 59-67). The curing catalyst employed by Murai et al. also incorporates a thermoinitiated cationic polymerization catalyst. Murai et al. use onium salts of nitrogen, sulfur, phosphorus, or iodine with a negative ion component of SbF_6^-, SbF_4^-, AsF_6^-, PF_6^-, or the like (column 5, line 47 through column 7, line 46). In addition, Murai et al. also provide the option of using iron aromatic compounds, organosilicon compounds, and hydroxy functional aromatic compounds as the cationic polymerization catalyst (column 5, line 47 through column 7, line 67). All of the catalyst compounds used by Murai et al. contain either: *1)* a substituted hydrocarbon group having a carbon number of more than 10, *2)* a nonsubstituted hydrocarbon group having a carbon number of more than 10, or *3)* a cyclic organic structure having a more than 10 carbon number

hydrocarbon group. These catalyst compounds are advantageous because they provide a temperature control mechanism over the crosslinking reaction between the epoxy monomer and the acrylic resin. In addition, they also provide: high storage stability, excellent curing properties, excellent electric insulating properties, and excellent mechanical strength (column 55, lines 3-32).

Murai et al. and Ikushima et al. teach analogous ionic polymerizable resin systems, and both resin systems utilize a curing catalyst that incorporates a thermally activated cationic polymerization catalyst in order to provide a temperature-controlled crosslinking mechanism. The cationic polymerization catalysts used by Ikushima et al. have the same core structure as the cationic polymerization catalysts used by Murai et al., with the exception of the specified hydrocarbon group. Because both sets of cationic polymerization catalysts are used for the same purpose (temperature controlled crosslinking), it would have been obvious to have used the cationic polymerization catalysts of Murai et al. in the composition of Ikushima et al. to provide the added benefits of better storage stability and improved curing properties, electric insulating properties, and mechanical strength.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a cationic polymerization catalyst featuring: *1)* a substituted hydrocarbon group having a carbon number of more than 10, *2)* a nonsubstituted hydrocarbon group having a carbon number of more than 10, or *3)* a cyclic organic structure having a more than 10 carbon number hydrocarbon group, as taught by Murai et al., in the resin composition of Ikushima et al. because Murai et al. disclose that this type of cationic polymerization catalyst provides: *a)* temperature controlled crosslinking, *b)* high storage stability, *c)* excellent curing properties, *d)*

excellent electric insulating properties, and *e)* excellent mechanical strength in an ionic polymerizable epoxy/acrylic resin system.

Regarding claims 9-12, Murai et al. and Ikushima et al. are as set forth above and incorporated herein.

Ikushima et al. do not teach the use of a thermally-activating ionic polymerization catalyst that further includes compounds represented by formulae: (III-1'), (III-1), or (III-2), set forth in instant claims 9-12.

Murai et al. teach the use of a second curing catalyst that is used in combination with the cationic polymerization catalyst (column 3, lines 25-30; column 37, lines 37-52). This second curing catalyst corresponds to compounds (III-1'), (III-1), and (III-2) of the instant claims (column 3, line 25 through column 40; column 37, line 37 through column 40, line 35). This combination of catalysts achieves the same benefits of the lone ionic polymerization catalyst; hence, the use of this combination in Ikushima et al. would have been obvious.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a cationic polymerization catalyst featuring: *1)* a substituted hydrocarbon group having a carbon number of more than 10, *2)* a nonsubstituted hydrocarbon group having a carbon number of more than 10, or *3)* a cyclic organic structure having a more than 10 carbon number hydrocarbon group; and a catalyst compound corresponding to formulae (III-1'), (III-1), or (III-2), as taught by Murai et al., in the resin composition of Ikushima et al. because Murai et al. disclose that this combination of cationic polymerization catalyst and secondary curing catalyst provides: *a)* temperature controlled crosslinking, *b)* high storage stability, *c)* excellent

curing properties, *d)* excellent electric insulating properties, and *e)* excellent mechanical strength in an ionic polymerizable epoxy/acrylic resin system.

Allowable Subject Matter

18. Claims 18 and 43 are allowed.

19. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. Claim 21 would be allowable if rewritten to overcome the objection(s), set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter: neither Murai et al. nor Ikushima et al. teach the use of an additional epoxy selected from the group consisting of a bisphenol-type epoxy compound, a novolak-type epoxy compound, and a brominated-type epoxy compound, combined with: components (ii-1), (ii-2), and (3); or components (v-1), (v-4), and (3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J Feely
August 6, 2003

Robert Dawson
Supervisory Patent Examiner
Technology Center 1700